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The Asymmetric effect of discretionary and nondiscretionary components of accruals on the relation between earnings dispersion and excess stock returns

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Abstract

This paper aims to investigate the asymmetric effect of discretionary and nondiscretionary components of accruals on the relation between earnings dispersion and excess returns. With the increase of discretionary and nondiscretionary components of accruals, what behavior does the earnings distribution show and what effect does this issue have on the excess returns? This research presents an asymmetric correlation in terms of method and nature. Using a systematic sampling method from the companies listed in the Tehran Stock Exchange (TSE), 137 companies were selected as a sample from 2014 to 2020. After examining the classical assumptions of regressions, the panel data model with fixed effects was determined. The results show that (1) there is a positive and significant relation between earnings dispersion and excess stock returns, (2) the accrual's discretionary components have an insignificant effect on the relation between earnings dispersion and excess stock returns, (3) with the increase of discretionary components of accruals, the relation between earnings dispersion and excess stock returns increases, (4) the accrual's nondiscretionary components have a negative and significant effect on the relation between earnings dispersion and excess stock returns, (5) with the increase of accrual's nondiscretionary components, the relation between earnings dispersion and excess stock returns goes up.

Keywords: Asymmetric effect, discretionary and nondiscretionary of accruals, earnings dispersion, excess stock returns
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1 Introduction

Management's opportunistic behavior on earnings components can cause earnings dispersion and subsequently affects the process of interpreting management signals [13, 1]. So, there should be a robust negative relation between earnings dispersion and stock returns with high discretionary accruals [13]. If the nondiscretionary accruals are low, the earnings dispersion anomaly will intensify in them. As a result, for companies with higher specific volatility, the abuses caused by the high discretionary accruals will be more severe, and the earnings dispersion anomaly will likely be more prevalent.

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Earnings dispersion can often be a source of uncertainty and risk, so it is expected to yield higher returns in the stock market. However, investors and researchers have observed an unusual pattern in the stock market, so the higher the earnings dispersion, the lower the returns. Many researchers have presented various arguments for the negative relation between earnings dispersion and stock returns from risk-based and earnings behavior aspects. Thus, optimistic valuations increase stock prices and subsequently, in the following period, decrease returns. In this situation, high earnings dispersion and high trading costs will coincide and the anomaly of earnings dispersion is more common for stocks with less liquidity [16]. Researchers have sought to explain the problem of earnings dispersion with market inefficiency and to explain the anomaly of earnings dispersion from the risk perspective on market efficiency. Earnings dispersion indicates unsystematic risk of companies, and as management discretion increases, the expected returns decrease for companies with high leverage [12]. The uncertainty components of earnings may lead to asymmetric accruals. Then, they relate earnings dispersion to the anomaly of earnings dispersion [4], [10]. On the other hand, managers' opportunistic activities in earnings components go up the earnings dispersion anomaly. Higher discretionary accruals, which can be considered as opportunistic managerial activities, are associated with more errors in forecasts and lead to more dispersion of the opinion of analysts and users of earnings information. As a result, overvaluation can occur and lead to lower returns in the next period. Therefore, it is expected that the anomaly of earnings dispersion in companies with higher discretionary components or less nondiscretionary components, subsequently, the abnormal relation between earnings dispersion and stock returns, will be insignificant or almost non-existent.

Therefore, the high discretionary components of earnings show management's opportunistic activities for overpricing and higher dispersion of sock returns. Then, in the subsequent period, stocks experience a sharp decline in returns and the anomaly of analyst forecast dispersion increases [13]. Therefore, the problem of this research is whether the discretionary and nondiscretionary components of accruals affect on the relation between earnings dispersion and excess stock returns.

Previous researches show that analysts mistakenly predict higher earnings for companies with high discretionary accruals, lower quality of discretionary accruals are like more opportunities for analysts than the benefits of identifying this situation for collecting private information; Therefore, analysts tend to provide more analytical coverage for companies with high discretionary accruals. In general, companies with high discretionary accruals are scrutinized more by analysts, and often these forecasts are inaccurate and inflated, which is likely to lead to a broader dispersion between analyst forecasts. There will be severe abuse among investors, and the stock price will decrease in the next period, so there should be a negative relation between earnings dispersion and returns for shares that have high discretionary accruals; Therefore, it should be checked that with the increase of discretionary and nondiscretionary accruals, what kind of behavior shows earnings distribution. Also, discretionary accruals indicate opportunistic management behaviors that probably cause price fluctuation and abnormal dispersion. Compared to undervaluation, overvaluation occurs more in the market, because the diversity in analysts' opinions about valuation is created. On the other hand, for companies with higher specific volatility, the abuses caused by the high discretionary accruals, and the abnormality of their earnings dispersion will probably have more comprehensive distribution range. Finally, another necessity of this research is what effect the increase of discretionary and nondiscretionary accruals have on the relation between earnings dispersion and excess return.

2 Theoretical backgrounds

2.1 The relation between earnings dispersion and stock returns

In companies with high dispersion in earnings, their stock returns are lower than in companies with low dispersion. This issue is interesting because these companies have more risk and subsequently will have lower future returns. This is a sign of investors' inability to fully understand the dispersion of earnings that the strategic interaction between managers' behaviors and analysts' behaviors causes analysts' forecasts to be pessimistic and behind the earnings announcement. Because of these gloomy forecasts, companies constantly try to release information to meet analysts' expectations. This strategic interaction, also known as the earnings surprise game, is argued to create a negative relation between analyst forecast dispersion and firms' propensity to meet current quarter earnings expectations.

Previous research shows that managers have strong incentives to take actions that prevent the loss of earnings expectations [3]. Since forecast dispersion is an inverse measure of analysts' information accuracy, it is argued that managing traders' expectations lead to a negative relation between forecast dispersion and a firm's propensity to meet earnings expectations.

Firms with high earnings dispersion have significantly lower future stock returns than firms with low earnings dispersion. It has been found that this effect is concentrated in the months of earnings announcements [18].

Companies with low (high) earnings dispersion are significantly more (less) likely to meet analysts' quarterly earnings expectations. To better understand the source of this negative relation between earnings dispersion and meeting expectations, two measures are relied on to predict the probability of meeting earnings expectations by companies. Based on the opinion of [12], [18], the pessimism prediction criteria of analysts and companies' motivations are used to manage expectations, respectively.

While these measures capture differences in firms' propensity to meet current quarter earnings expectations and predict subsequent earnings announcement returns, it show that they are negatively related to forecasting dispersion. By examining the extent and intensity of this relation, we will arrive at an explanation of the dispersion anomaly. Thus, a two-step approach is used in which the predicted dispersion measures are first decomposed into components, as described in the previous measures of forecast pessimism and expectation management. Part of the variation in dispersion is related to the likelihood of firms engaging in the earnings surprise game, which explains the ability to predict distribution for announced returns. For the residual component of the forecast variance that is not defined by the two measures, a significant negative relation with the announcement return is not found. Because these prior measures show differences in the conditional probability of firms meeting expectations, the empirical results are consistent with the prediction that investors' mispricing of short-term earnings expectations explains the relation between forecast dispersion and earnings announcement returns [2]. Therefore, investors' mispricing of earnings expectations provides a suitable explanation for the forecast dispersion anomaly. Pessimistic earnings expectations explain the predictive ability of dispersion for earnings announcement returns. Therefore, gloomy analyst forecasts and the inability of investors to entirely deviate from these forecasts play an important role in explaining the anomaly of forecast dispersion [9].

2.2 Dispersion of earnings and accruals

Forecast dispersion reflects uncertainty and lack of consensus among market participants about future events. There is also much empirical evidence that forecast dispersion is affected by the quality of financial disclosure and earnings information. The researchers found that the diffusion of earnings forecasts narrowed following the release of new financial report by the company, and vice versa, it increased following violations of generally accepted accounting principles. Forecast dispersion is also associated with earnings disclosures, which are rated low by some financial analysts. Although it is clear that earnings disclosure practices affect the distribution of analysts' earnings forecasts, the economic implications associated with forecast dispersion are not clearly understood [8], [19]. Researchers argue that the level of dispersion in earnings forecasts is perceived by investors as valuable information about the level of uncertainty of companies' future economic performance. However, the existing empirical research examining whether dispersion in earnings forecasts reflects ex-ante uncertainty about firms' future financial performance is mixed and inconclusive.

The evidence reported in these studies is also challenging to interpret because the experiments are based on the scatter in all recorded forecasts and may be strongly influenced by outdated projections. For example, some studies show that dispersion is positively associated with the magnitude of the error in forecasting the mean earnings and variance of the return that exists by options prices. Stickel [17] failed to find a hypothesized positive relation between earnings dispersion as a measure of uncertainty before interim earnings releases. Finally, after seeing a negative association between earnings-price response coefficients and prior distribution, they concluded that the distribution in earnings forecasts is more likely to reflect uncertainty about the irrelevant component of firms' future earnings prices than uncertainty about the relevant part of future earnings prices. However, the negative relation they report between earnings response coefficients and forecast dispersion may be consistent with diffusion reflecting uncertainty about firms' future economic performance [15].

Some argue that after the release of public news, the dispersion of analysts' forecasts makes investors feel more uncertain, and this, in turn, may stimulate demand for more private information, causing investors to become more biased, which is less critical than the average forecast of the analyst during the formation of expectations. Private information is also predicted to reduce the effect of analyst mean forecasting error on stock price reactions around subsequent earnings releases. Such an effect can cause a negative relation between earnings response coefficients and prior dispersion. However, it is argued that, when acquiring of more private information is associated with high levels of forecast dispersion, private information will not be sufficient to alert investors to future announcements against low levels of forecast dispersion. Thus, researchers' findings that forecast dispersion is associated with more forecasting activity after high earnings announcements provide indirect evidence that forecast dispersion stimulates costly information acquisition [11].

Changes in the frequency of earnings information releases can interact with outdated forecasts, causing spurious variability in forecast dispersion, that is, unrelated to uncertainty. These spurious changes can, in turn, cause spurious

correlations between earnings forecast dispersion, analyst activity, and price-based measures of risk, such as beta and variance of stock returns, as these variables are likely to be influenced by earnings information.

3 Research methodology

This research is practical in terms of purpose and descriptive correlation in terms of method and nature. The statistical population of this research is the companies listed in the TSE from 2014 to 2020. The sample was selected through the systematic elimination method based on some criteria, and which final sample is 137 companies.

3.1 Hypotheses:

1) The relation between earnings dispersion and excess stock returns is positive.

2) The effect of discretionary accruals on the relation between earnings dispersion and excess stock returns is positive.

3) With the increase of discretionary accruals, the relation between earnings dispersion and excess stock returns increases.

4) The effect of nondiscretionary accruals on the relation between earnings dispersion and excess stock returns is negative.

5) With the increase of nondiscretionary accruals, the relation between earnings dispersion and excess stock returns decreases.

3.2 Models and variables

To test the hypotheses four below models are presented:

$$(1)\ r_{\mathrm{it}} - r_{\mathrm{ft}} = \beta_0 + \beta_1 \sigma_{\mathrm{Income_{it}}} + \beta_2 \left(\frac{\mathrm{cov}\,(R_m, R_i)}{\delta^2(m)}\right)_{\mathrm{it}} + \beta_3 Ln(MV)_{\mathrm{it}} + \beta_4 \left(\frac{B}{M}\right)_{\mathrm{it}} + \varepsilon$$

$$(2)\ r_{\mathrm{it}} - r_{\mathrm{ft}} = \beta_0 + \beta_1 \sigma_{\mathrm{Income_{it}}} + \beta_2 \mathrm{DE}_{i,t} + \beta_3 \sigma_{\mathrm{Income_{it}}} \times \mathrm{DE_{it}} + \beta_4 \left(\frac{\mathrm{cov}\,(R_m, R_i)}{\delta^2(m)}\right)_{\mathrm{it}} + \beta_5 Ln(MV)_{\mathrm{it}} + \beta_6 \left(\frac{B}{M}\right)_{\mathrm{it}} + \varepsilon$$

$$(3)\ r_{\mathrm{it}} - r_{\mathrm{ft}} = \beta_0 + \beta_1 \sigma_{\mathrm{Income_{it}}} + \beta_2\,(\mathrm{DE} > 0) + \beta_3\,(\mathrm{DE} > 0) \times \sigma_{\mathrm{Income_{it}}} + \beta_4 \left(\frac{\mathrm{cov}\,(R_m, R_i)}{\delta^2(m)}\right)_{\mathrm{it}} + \beta_5 Ln(MV)_{\mathrm{it}} + \beta_6 \left(\frac{B}{M}\right)_{\mathrm{it}} + \varepsilon$$

$$(4)\ r_{\mathrm{it}} - r_{\mathrm{ft}} = \beta_0 + \beta_1 \sigma_{\mathrm{Income_{it}}} + \beta_2 \mathrm{NDE}_{i,t} + \beta_3 \sigma_{\mathrm{Income_{it}}} \times \mathrm{NDE_{it}} + \beta_4 \left(\frac{\mathrm{cov}\,(R_m, R_i)}{\delta^2(m)}\right)_{\mathrm{it}} + \beta_5 Ln(MV)_{\mathrm{it}} + \beta_6 \left(\frac{B}{M}\right)_{\mathrm{it}} + \varepsilon$$

$$(5)\ r_{\mathrm{it}} - r_{\mathrm{ft}} = \beta_0 + \beta_1 \sigma_{\mathrm{Income_{it}}} + \beta_2\,(\mathrm{NDE} > 0) + \beta_3\,(\mathrm{NDE} > 0) \times \sigma_{\mathrm{Income_{it}}} + \beta_4 \left(\frac{\mathrm{cov}\,(R_m, R_i)}{\delta^2(m)}\right)_{\mathrm{it}} + \beta_5 Ln(MV)_{\mathrm{it}} + \beta_6 \left(\frac{B}{M}\right)_{\mathrm{it}} + \varepsilon$$

where in these models:

$\mathbf{r}_{\mathrm{it}} - \mathbf{r}_{\mathrm{ft}}$: Excess return is the dependent variable and is equal to the difference between the stock return and the risk-free return [13].

$\mathbf{r}_{\mathrm{it}}$: The real yields of the shares of the companies listed in the TSE.

$\mathbf{r}_{\mathrm{ft}}$: The risk-free rate of return is equal to the interest rate of one-year investment deposits of Iranian banks as stated by the announcement of the Central Bank of the Islamic Republic of Iran.

Independent variable:

$\sigma_{\mathrm{Income_{it}}}$: Earnings dispersion is equal to the standard deviation of earnings over the last three years.

Moderating variables:

Accruals include two categories of discretionary accruals (DE) and nondiscretionary accruals (NDE).

Discretionary accruals (DE): To measure the company's discretionary and nondiscretionary accruals, the following model is estimated:

$$(6)\ \frac{\mathrm{TCA_{it}}}{\mathrm{TA}_{it-1}} = \beta_{\mathrm{it}}\left(\frac{1}{\mathrm{TA}_{it-1}}\right) + \gamma_{\mathrm{it}}\left(\frac{\Delta\mathrm{sale_{it}}}{\mathrm{TA}_{it-1}} - \frac{\Delta\mathrm{Rec_{it}}}{\mathrm{TA}_{it-1}}\right) + \delta_{\mathrm{it}}\frac{\mathrm{PPE}_{i,t}}{\mathrm{TA}_{it-1}} + \varepsilon$$

where, TA indicates the total assets of firm i in calendar year t; Δsale, sales changes; ΔRec, changes in accounts receivable, while PPE stands for property, plant and equipment (gross) are at the end of the year. All the above items have been deflated by the previous-year total assets. After calculating equation (5), the remaining value of the mentioned model represents discretionary accruals (DE).

Total Current accruals (TCA) in year t are calculated as follows:

$$(7)\ \mathrm{TCA_{it}} = [\Delta CA_{\mathrm{it}} - \Delta Cash_{\mathrm{it}}] - [\Delta CL_{\mathrm{it}} - \Delta RLTP_{\mathrm{it}}] - \mathrm{DA_{it}}$$

where $\Delta\mathrm{CA_{it}}$ = change in current assets; ΔCL_{it}=change in current liabilities; $\Delta Cash_{\mathrm{it}}$=change in cash and cash equivalents; $\Delta RLTP_{\mathrm{it}}$=change in long-term liabilities; and DA is asset depreciation, and the sum of the predicted value for TCA based on model (6) represents nondiscretionary accruals (NDE) [13].

Control variables:

$\beta_{\mathbf{i}} = \frac{cov(R_m, R_i)}{\delta^2(m)}$, where, R_i and $\mathrm{R_m}$ stand for average stock returns for firm I, and average return of stock market, respectively.

Ln(MV): Firm size is the natural logarithm of the firm's market value.

B/M: book to market ratio.

4 4 Research findings

To avoid false regression, it is necessary to check the stability of the variables before estimating the model. If this property is not valid for the variables, the estimated model will not provide correct results. For this reason, using the unit root test, panel data has been analyzed based on the method of Levin, Lin and Chu [14]. The results show that all variables are stable. Chow, Hausman and Brush-Pagan tests have been used to select the appropriate model, the results showed in table (1).

Table 1: **default tests of models**

Models	(1)	(2)	(3)	(4)	(5)
Chow	1.90^{*}	1.83^{*}	1.76^{*}	1.77^{*}	1.75^{*}
Hausman	197.90^{*}	189.86^{*}	181.96^{*}	182.11^{*}	181.07^{*}
Brush-Pagan	$868.83^{*\dagger}$	$872.05^{*\dagger}$	$962.37^{*\dagger}$	$861.53^{*\dagger}$	$861.09^{*\dagger}$

* indicates significance at the 1% level. † indicates the heterogeneity of variances in OLS.

According to table (1), because the probability value is less than 0.05, the hypothesis of the data being a panel is confirmed. Then, the Hausman test is run to determine the research model, considering that the probability value of the Hausman test is less than 0.05, so the models ran based on fixed effects. Table (1) also indicated that the probability value is less than 0.05, so there is variances heterogeneity. Therefore, generalized regression is used to solve the heterogeneity of variances.

To check the collinearity of the variables in the models, the variance inflation factor (VIF) is used. The values of VIF in all models were less than three since it indicates the absence of collinearity, so there is no collinearity between the variables.

According to table (2), the f statistic of all models is significant, so the models are reliable, and the Durbin-Watson statistic is in the range of 1.5 to 2.5, so it indicates there is no autocorrelation in the residuals from the statistical models.

Table (2) shows that the effect of discretionary accruals (DE) on the relation between earnings dispersion and excess stock returns is positive but insignificant, so hypothesis (1) is rejected at the 95% level.

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Based on table (2), an increase in discretionary accruals has a positive and significant effect on stock returns, and the effect of increase in discretionary accruals ($DE > 0$) on the relation between earnings dispersion and excess stock returns is negative and significant, so hypothesis (2) is confirmed at the level of 99%.

Table 2: **hypothesis test results**

Models		(1)	(2)	(3)	(4)	(5)
intercept	c	-12.82** (-10.7)	-9.25** (-14.7)	-9.43** (-13.7)	-10.25** (-16.5)	-10.01** (-16.7)
Earnings dispersion	$\sigma_{\text{Income}_{it}}$	0.31 (2.3)	0.17** (2.45)	0.21* (2.48)	0.18* (2.47)	0.06 (0.8)
DE	*DE*		0.41 (1.3)			
Increase in DE	*DE>0*			0.18* (1.98)		
Earnings dispersion × DE	$\sigma_{\text{Income}_{it}} \times DE$		0.17 (0.53)			
Earnings dispersion × (DE>0)	$\sigma_{\text{Income}_{it}} \times DE > 0$			-0.11** (-1.1)		
NDE	*NDE*				-2.97** (-3.8)	
Increase in NDE	*NDE>0*					-0.43** (-3.1)
Earnings dispersion × NDE	$\sigma_{\text{Income}_{it}} \times NDE$				2.77** (3.9)	
Earnings dispersion × (DE>0)	$\sigma_{\text{Income}_{it}} \times NDE > 0$					0.39** (2.8)
β	$\frac{cov(R_m,R_i)}{\delta^2(m)}$	0.38** (5.3)	0.31** (9.6)	0.32** (8.9)	0.30** (8.6)	0.32** (8.9)
Size	$Ln(MV)$	0.91** (12.7)	0.68** (17.8)	0.68** (16.4)	0.74** (19.5)	0.73** (19.8)
book to market value	B/M	-1.03** (-2.8)	-0.98** (-5.3)	-0.95** (-4.8)	-0.82** (-4.8)	-0.83** (-4.9)
Coefficient of determination	R^2	0.396	0.625	0.616	0.626	0.627
Adj. coefficient of determination	*adj.* R^2	0.292	0.560	0.549	0.562	0.561
Statistics f	f	3.83**	9.5**	9.2**	9.7**	9.6**
Durbin Watson Statistic	DW	2.11	2.32	2.40	2.43	2.24

**, * indicates significance at the 1%, 5% level, respectively.
Numbers in parentheses indicate autocorrelation-adjusted t-statistics.

The result of model 3 in able (2) indicates that the effect of nondiscretionary accruals (NDE) on the relation between earnings dispersion and excess stock returns is positive and significant, so the hypothesis (3) is accepted at the 95% level.

Based on table (2), an increase in nondiscretionary accruals has a negative and significant effect on stock returns, and the effect of increase in nondiscretionary accruals ($NDE > 0$) on the relation between earnings dispersion and excess stock returns is negative and significant, so hypothesis (4) is confirmed at the level of 99%.

5 Discussion and conclusion

To examine the effect of managers behaviors on the earnings dispersion, two criteria are used including the discretionary and nondiscretionary components of accruals. This research, therefore, studies the asymmetric effect of discretionary and nondiscretionary components of accruals, as proxies for managers effect, on the relation between earnings dispersion and excess stock returns. It explores earnings dispersion anomaly. The results show that there is a positive and significant relation between earnings dispersion and excess stock returns. The company's earnings dispersion has a positive relation with the excess returns, in other words, with the increase of the earnings dispersion, the excess returns increases. Therefore, by releasing information about the company's earnings, an information shock is transmitted to the market and has a positive effect on the stock price and, subsequently the excess returns.

The increase in discretionary accruals has a positive and significant relation with excess returns. Therefore, the more discretionary accruals increase, the more management affects the discretionary accruals by exercising its authority and decisions, and also, the more the management tries to increase the returns. The increase in the nondiscretionary

accruals has a negative and significant relation with excess returns. This category of accruals is not affected by management decisions, and therefore, their increase has a negative relation on excess returns. This issue is also compatible with the theoretical background.

Discretionary accruals do not have a significant effect on the relation between earnings dispersion and excess returns. Management options and decisions do not affect the relation between earnings dispersion and excess returns. Although, based on theoretical foundations, there should be a positive relation.

According to the market efficiency and unsystematic risk, the specific risk of the company can be explained, and the anomaly of analysts' forecast dispersion reduces the expected returns of companies. Therefore, the abnormality of analysts' forecast dispersion can be attributed to the uncertainty component, not the information asymmetry component. In general, it can be said about the dispersion anomaly of analysts' forecasts that the presence of higher discretionary accruals- representing the manipulation of earnings information by management- leads to an increase in the anomaly of the dispersion of analysts' earnings forecasts. And it shows that investors follow analysts' overly optimistic forecasts for companies with higher discretionary accruals and overvalue them, and higher discretionary accruals, as opportunistic managerial behaviors, are associated with overvaluation in stocks and higher analyst earnings forecast dispersion, and this issue can be associated with more analyst coverage and more forecast errors and lead to more forecast dispersion among analysts. In this regard, [11] confirming the dispersion puzzle - the existence of a negative relation between earnings forecast dispersion and stock returns- show that most of the anomalies, including the dispersion puzzle, after applying higher standards, go away. These results are in line with the research results of [5], [6] and [7] based on the inaccuracy and inflation of analysts' forecasts for companies with high earnings discretionary information. That is, high discretionary accruals are related to the dispersion of analysts' earnings forecasts, which is in line with the results of the present study; of course, it should be noted that the comparison of the results of studies conducted in other places and times by other people, although it may not seem appropriate from a scientific view.

Management decisions do not affect this relation; therefore, management cannot influence the connection between earnings dispersion and excess return by choosing its methods and actions. According to the positive coefficient of the earnings dispersion variable in interaction with nondiscretionary accruals, there is a positive relation between the earnings dispersion and the excess return of the company. In companies with high nondiscretionary accruals, there are more analyst coverage and incorrect forecasts, which will likely lead to a broader dispersion between analyst forecasts. According to this argument, this will lead to severe abuse among investors and the stock price will increase in the current period but decrease in the next period.

There are some limitations of this research that annual adjustments, inflation, and the reduction in the purchasing power of money have a significant effect on the figures of financial statements, and the data of this research has not been adjusted for these.

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